



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,282	01/27/2004	Ravi P. Gunturi	42P17370	3426
8791 7590 03/17/2008 BLAKELY SOKOLOFF TAYLOR & ZAFMAN 1279 OAKMEAD PARKWAY SUNNYVALE, CA 94085-4040				
EXAMINER YUEN, KAN				
ART UNIT 2616		PAPER NUMBER		
MAIL DATE 03/17/2008		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/766,282

Applicant(s)

GUNTURI ET AL.

Examiner

KAN YUEN

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Response to Arguments

1. Applicant's arguments, see remark, filed 12/14/2007, with respect to the rejection(s) of claim(s) 1-18 under 102 and 103 rejections have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kuo et al. (Pub No.: 2003/0021230), in view of Kataria (Pat No.: 7177279).

Specification Objection

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 103

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-5, 7, 9, 10-14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo et al. (Pub No.: 2003/0021230), in view of Kataria (Pat No.: 7177279).

For claim 1, Kuo et al. disclosed the method of registering, a procedure at a downstream component (**fig. 1, VQM 106**) in a packet processing pipeline, the procedure being associated with at least one event (**see paragraphs 0030 and 0047,**

fig. 1). The VQM 106 is implemented or registered with a procedure or we call it the high and low threshold levels in its associated queues. When a particular virtual queue of the VQM 106 becomes filled with traffic to nearly full capacity, then the flow control manager 116 is informed by the VQM 106 of the need for flow control by using a feedback. The flow control 116 interacts with scheduler 114 to stop or reduce the transmission rate for packet transfer to that queue. Thus, the detection of filled queue is considered as one event; processing a received packet at the upstream component (**fig. 1, switching node 102**) executing on a first engine (**fig. 1, scheduler 114, paragraph 0029-0030**); processing the packet at the downstream component executing on a second engine (**fig. 1, flow control manager 116**) after the processing of the received packet at the upstream component (**paragraph 0033**). The flow control can be located anywhere in the switch system 100, thus flow control manager 116 can be located in VQM and be treated as second engine; the processing at the downstream component comprising: determining occurrence of the at least one associated event at the downstream component; and in response, executing the registered procedure at the second engine (**see paragraphs 0030-0033, fig. 1**). When a particular virtual queue of the VQM 106 becomes filled with traffic to nearly full capacity, then the flow control manager 116 is informed by the VQM 106 of the need for flow control by using a feedback. The flow control 116 interacts with scheduler 114 to stop or reduce the transmission rate for packet transfer to that queue. Thus, the detection of filled queue is considered as one event. The high and low threshold levels are the procedure to be

executed to monitor the level in the queues. Once any queue exceeds the limits, a feedback communicated from the flow control 116 to the scheduler is communicated.

However, Kuo et al. silent on the method of registering a procedure, in response to an instruction included in source code for an upstream component. Kataria from the same or similar fields of endeavor teaches the method of registering a procedure, in response to an instruction included in source code for an upstream component (**see column 2, lines 50-65, fig, 2**). Cells are received at one or more buffers, each buffer configured to receive cells or the source code of an associated VC and a threshold value based on traffic of the VC. Thus, the buffer configured to set its threshold level based on an instruction or a threshold value from an associated cell. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Kataria in the network of Kuo et al. The motivation for using the method as taught by Kataria in the network of Kuo et al. being that threshold level can be set based on transmitting device.

Regarding claims 2, 11 Kuo et al. disclosed the method of the first engine and second engine comprise engines integrated on the same semiconductor die (**paragraph 0033**). The flow control 116 and the scheduler 114 is located on the same processor, thus, they are integrated on the same semiconductor die.

Regarding claims 3, 12 Kuo et al. disclosed the method of the first engine and the second engine comprises multi-threaded engines (**see paragraph 0030-0033**). The both engines can be operating can be communicated bi-directionally, thus they are multi-threaded engines.

Regarding claims 4, 13 Kataria disclosed the method of the procedure comprises a procedure that alters data structures defined by the upstream component (**see column 2, lines 50-65, fig. 2**). When different threshold value is received, the amount of data stored in the buffer is changed.

Regarding claims 5, 14 Kuo et al. disclosed the method of the upstream component and downstream component comprise at least one of: adjacent components in the pipeline and non-adjacent components in the pipeline (**see paragraphs 0027-0029, fig. 1, traffic manager 110**).

Regarding claims 7, 16 Kuo et al. disclosed the method of the registering comprises loading instructions for the procedure into the second engine (**see paragraphs 0030 and 0047, fig. 1**). The threshold levels are implemented or loaded into the flow control 116.

Regarding claims 8, 17 Kuo et al. disclosed the method of the registering comprises registering the procedure with an event handler that invokes registered procedures in response to events signaled by the downstream component (**see paragraphs 0030-0033, fig. 1**). When a particular virtual queue of the VQM 106 becomes filled with traffic to nearly full capacity, then the flow control manager 116 is informed by the VQM 106 of the need for flow control by using a feedback. The flow control 116 interacts with scheduler 114 to stop or reduce the transmission rate for packet transfer to that queue. Thus, the detection of filled queue is considered as one event. The high and low threshold levels are the procedure to be executed to monitor

the level in the queues. Once any queue exceeds the limits, a feedback communicated from the flow control 116 to the scheduler is communicated.

Regarding claim 10, Kuo et al. disclosed the method of registering, a procedure at a downstream component (**fig. 1, VQM 106**) in a packet processing pipeline, the procedure being associated with at least one event (**see paragraphs 0030 and 0047, fig. 1**). The VQM 106 is implemented or registered with a procedure or we call it the high and low threshold levels in its associated queues. When a particular virtual queue of the VQM 106 becomes filled with traffic to nearly full capacity, then the flow control manager 116 is informed by the VQM 106 of the need for flow control by using a feedback. The flow control 116 interacts with scheduler 114 to stop or reduce the transmission rate for packet transfer to that queue. Thus, the detection of filled queue is considered as one event; process a received packet at the upstream component (**fig. 1, switching node 102**) executing on the first engine (**fig. 1, scheduler 114, paragraph 0029-0030**); processing the packet at the downstream component executing on a second engine (**fig. 1, flow control manager 116**) after the processing of the received packet at the upstream component (**paragraph 0033**). The flow control can be located anywhere in the switch system 100, thus flow control manager 116 can be located in VQM and be treated as second engine; the processing at the downstream component comprising: determining occurrence of the at least one associated event at the downstream component; and in response, executing the registered procedure at the second engine determining occurrence of the at least one associated event at the downstream component; and in response, executing the registered procedure at the

second engine (see paragraphs 0030-0033, fig. 1). When a particular virtual queue of the VQM 106 becomes filled with traffic to nearly full capacity, then the flow control manager 116 is informed by the VQM 106 of the need for flow control by using a feedback. The flow control 116 interacts with scheduler 114 to stop or reduce the transmission rate for packet transfer to that queue. Thus, the detection of filled queue is considered as one event. The high and low threshold levels are the procedure to be executed to monitor the level in the queues. Once any queue exceeds the limits, a feedback communicated from the flow control 116 to the scheduler is communicated.

However, Kuo et al. did not disclose the method of access instructions of an upstream component in a packet processing pipeline the upstream component to be executed by a first engine; register a procedure, in response to an instruction included in source code for the upstream component. Kataria from the same or similar fields of endeavor teaches the method of access instructions of an upstream component in a packet processing pipeline the upstream component to be executed by a first engine; register a procedure, in response to an instruction included in source code for the upstream component (see column 2, lines 50-65, fig. 2). Cells are received at one or more buffers, each buffer configured to receive cells or the source code of an associated VC and a threshold value based on traffic of the VC. Thus, the buffer configured to set its threshold level based on the accessing of instruction or using the threshold value from an associated cell. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Kataria in the network of Kuo et al. The motivation for using the method as taught by

Art Unit: 2616

Kataria in the network of Kuo et al. being that threshold level can be set based on transmitting device.

6. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo et al. (Pub No.: 2003/0021230), in view of Kataria (Pat No.: 7177279), as applied to claim 1 above, and further in view of Johnson et al. (Pat No.: 6920146).

For claim 6, Kuo et al. and Kataria disclosed all the subject matter of the claimed invention with the exception of the registering comprises one of: run-time registering and compile-time registering. Johnson et al. from the same or similar fields of endeavor teach the method of the registering comprises one of: run-time registering and compile-time registering (**see paragraph 0040, lines 1-6**). The Dbus is allowed to monitor the register at run-time or compile-time. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Johnson et al. in the network of Kuo et al. and Kataria. The motivation for using the method as taught by Johnson et al. in the network of Kuo et al. and Kataria being that the system increases the speed of registering.

Regarding claim 15, Johnson et al. disclosed a compiler (see paragraph 0040, lines 1-6). The Dbus is allowed to monitor the register at run-time or compile-time.

7. Claims 9, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo et al. (Pub No.: 2003/0021230), in view of Kataria (Pat No.: 7177279), as applied to claim 1 above, and further in view of Drort et al. (Pub No.: 2003/0193953).

For claim 9, Kuo et al. and Kataria disclosed all the subject matter of the claimed invention with the exception of the packet processing pipeline comprises one of the following: an IPv4 packet processing pipeline, an IPv6 packet processing pipeline, and an Asynchronous Transfer Mode (ATM) packet processing pipeline. Drort et al. from the same or similar fields of endeavor teaches the method of the packet processing pipeline comprises one of the following: an IPv4 packet processing pipeline, an IPv6 packet processing pipeline, and an Asynchronous Transfer Mode (ATM) packet processing pipeline (**see paragraph 0026, lines 10-25**). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Drort et al. in the network of Kuo et al. and Kataria. The motivation for using the method as taught by Drort et al. in the network of Kuo et al. and Kataria being that the system will improve the system resources such as bandwidth availability.

Regarding claim 18, Drort et al. disclosed the method of the packet processing pipeline comprises one of the following: an IPv4 packet processing pipeline, an IPv6 packet processing pipeline, and an Asynchronous Transfer Mode (ATM) packet processing pipeline (**see paragraph 0026, lines 10-25**).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAN YUEN whose telephone number is (571)270-1413. The examiner can normally be reached on Monday-Friday 10:00a.m-3:00p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky O. Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ricky Ngo/
Supervisory Patent Examiner, Art
Unit 2616

KY